

ABSTRACT OF THE DISCLOSURE

An exhaust gas cleaning system of a diesel engine includes a diesel particulate filter (a DPF) disposed in an exhaust passage, and a diesel oxidation catalyst (a DOC) disposed upstream of the DPF. When an electronic control unit (an ECU) performs a temperature increasing operation such as post-injection to eliminate particulate matters accumulated in the DPF, a ratio (a duty ratio) between a performing period and an interrupting period of the temperature increasing operation is changed in accordance with temperature of the DPF. Thus, a quantity of hydrocarbon supplied to the DOC is controlled stepwise or continuously. Thus, the temperature of the DPF can be increased to target temperature quickly and can be maintained near the target temperature when the regeneration of the DPF is performed.